LETTERS TO THE EDITOR.

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Remarkable Coelenterata from the West Coast of Ireland.

I HAVE been allowed to examine a small collection of Alcyonaria and Antipatharia that has been obtained by the fisheries branch of the Department of Agriculture for Ireland from deep water off the west coast of Ireland, and as this reveals some features of special interest I should be glad of an opportunity to write a short preliminary note upon it pending the examination of the species in detail.

The most interesting feature, perhaps, is the Coralliid, *Pleurocorallium johnsoni*, from 382 fathoms, about sixty miles off Achill Island. The family of precious corals to which this species belongs has hitherto only been obtained in the Mediterranean Sea, the Japanese seas, off Madeira and the Cape Verde islands, and in the Banda Sea. The specimens obtained by the *Challenger* in the Banda Sea were "dead," but I have recently published a preliminary note on a new species of precious coral from deep water off the coast of Timor, which was captured "alive" by the naturalists of the *Siboga* Expedition.

The distinction between the genus Corallium, to which *C. nobile*, the precious coral of the Mediterranean, *C. japonicum*, and *C. reginae*, the new species from Timor, belong, and the genus Pleurocorallium is not a distinction of very great importance, and, as recently pointed out by Kishinouye, cannot, with convenience, be much longer maintained. If, however, for the present we retain the two generic names it must be noted that Corallium no longer maintains its monopoly of corals that are precious, as the species *Pleurocorallium elatius* yields some of the most valuable classes of coral obtained in the Japanese fishery. Both in Japanese waters and off the Cape Verde Islands the valuable and the commercially worthless Coralliidæ occur in the same fishing area, and consequently it would not be a matter for surprise if a renewed investigation of the locality from which the Irish Fishery Department obtained its specimen of *Pleurocorallium johnsoni* yielded some specimens of commercial value.

I should not like to suggest the prospect of a coral fishery off the coast of Ireland, as the sea is too stormy and the water too deep at the station from which the specimen came to render any such fishery commercially successful, but it would be a matter of considerable scientific interest to find that precious corals are growing within a few miles of our British coasts.

The second feature of interest is the occurrence in these waters of at least three species of Antipatharia. This group of Cœlenterata is one which I thought was entirely exotic. I can find no mention of any Antipatharians in any of the lists of the British marine fauna that I have examined, but perhaps some of your readers could inform me if I have overlooked any references to them. The species are, I believe, *Cirrhipathes spiralis*, *Antipathella gracilis*, and a species which I think must be new, but is allied to *Stichopathes lütkeni* in some respects.

Among the other interesting things in the collection are representatives of the alcyonarian genera Ceratoisis, Stachyodes, and Eunephthya, which I believe are new to the British fauna. The two pennatulid genera Kophobelemnon and Umbellula were obtained in deep water off the west coast of Scotland by the *Knight Errant* (Kophobelemnon only) in 1880, and by the *Triton* in 1882. These also have now been found off the west coast of Ireland. Although these genera may now be included in the British fauna as being found within the British area as defined by the British Association committee of 1888, they really represent the fauna that is common to the "mud line" of Murray of the eastern side of the North Atlantic Ocean.

Thus Pleurocorallium occurs off the Cape Verde Islands, Stachyodes off the Azores, *Ceratoisis grayii* off the coast of Portugal, *Antipathella gracilis* off the coast of Madeira, Kophobelemnon and Umbellula off the west coast of Scotland. These genera, with many others that live with them, constitute a fauna which is quite distinct from the ordinary shallow-water fauna of the British area.

SYDNEY J. HICKSON.

Victoria University of Manchester, October 24.

Action of Radium on Gelatin Media.

SOME misapprehension appears to exist in certain quarters as to the precise nature of the bodies I have called radiobes, as distinct from such aggregations as those which M. Dubois has obtained by the action of the salts of barium, radium, and manganese upon bouillon. M. Dubois describes his bodies as "*grosses vacuolides*," and their appearance is quite different from that of the bodies I have described, judging by the drawings which have been reproduced in the *Revue des Idées* during the last few months.

I have observed two distinct types of bodies, of an entirely different order of magnitude, one type, radiobes, extremely minute and only visible with the highest powers: the other visible with an ordinary magnifying glass. The latter are decidedly crystalline in their structure, and resemble the bodies obtained in various ways by the action of salts on gelatin. They are like the ones described by Schenck, and very like those obtained by Dubois and others.

The smaller type cannot be said to be large in any sense of the word, and are like the minutest visible diplococci or biscuit-shaped cocci. They do not exceed this size to any great extent.

It is therefore desirable that the two types should not be identified, as their appearance, order of magnitude, structure and behaviour seem to be quite different.

M. Dubois has not noticed these, and therefore it seems to me that his claim to priority is quite irrelevant.

Cambridge, October 21. JOHN BUTLER BURKE.

Border occasionally seen between Light and Dark Regions on Photographic Prints.

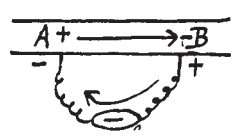
I HAVE once or twice been asked why photographs are apt to show a line or band or edging along the boundary of a bright and dark region. My assistant, Mr. E. E. Robinson, has thought of the reason, and it may be convenient to publish it. In a developed film the exposed portion perceptibly differs in thickness from the unacted-on portion, and accordingly the linear boundary of two contrasted regions may sometimes act as a cylindrical lens, and during printing either concentrate or disperse the light on the positive immediately beneath it.

October 20. OLIVER LODGE.

Terminology in Electro-physiology.

I WOULD deem it a favour to be assigned the space of a letter in order to make a suggestion in connection with the above still vexed subject.

It cannot be said that even now all is peace in the realm of electrical terminology as applied to physiological phenomena, in spite of Dr. Waller's helpful efforts in this direction. Dr. Waller's term "zincative" admirably expresses that a given region (A) of excited tissue is "electromotive like the zinc of a voltaic couple,"[1] is, in fact, a source of current towards a region (B) of less excited or non-excited tissue (the current, of course, travelling in the tissue from the region A to the region B, and in the external circuit from the region B to the region A); but it leaves untouched the solution of the old muddle over the use of the signs + and −.



Confessedly, "zincative" avoids any reference to + and −, but every teacher of physiology knows that sooner or later the + and − must appear, and with them all the ambiguities of "negativity of action," &c., if the student is to make his notes "agree" with his text-book.

[1] "The Signs of Life from their Electrical Aspect, p. 17. (Murray, 1903

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A large part of the difficulty arises from the different points of view taken by the electrician and the physiologist respectively, the electrician being concerned chiefly with the surfaces of conductors, the physiologist being interested chiefly in the interiors of living tissues.

Thus the above expression, "region A," is electrically ambiguous, for it may mean (1) either the *surface* of the region A, or (2) the *interior* of the same: certainly physiologically (and it may be also electrically) these are two very different things.

Are we speaking of surfaces or interiors when we talk of tissues and their electromotive states? This seems to me the gist of the initial obscurity.

In Dr. Waller's terminology A is "zincative" to B; but the electrically-minded student wishes to distribute his + and − somehow. The electrician says A is "negative" to B, because he is thinking of the surface at A to which current has been coming from B, as he finds by the galvanometer; but the physiologist, conceiving of what is going on *inside* the excited portion of tissue A, says, or should say, "A is electropositive to B," because he finds that current in the tissue must have come from A to B. The ambiguity is bound up with not distinguishing the surface from the interior.

All doubt, it seems to me, is removed when we say, the region A is, as to its interior, electropositive to B, but as to its surface electronegative to B; as to its *interior*, A is a "*positive plate*," as to its *surface* a "negative pole." Both these ideas are necessarily connoted by "zincative," only implicitly, however; for teaching purposes they must be made also explicit.

"Negativity of action" is then intelligible when it is distinctly laid down that it is only the *surface* of the active region that is being considered, for if the interior of the active tissue is thought of, then positivity of action must be the term descriptive of the electrical state.

If, then, the qualifying term "internally" or "externally," as the case requires, be added, no loophole for confusion is left; thus, A is internally electropositive to B, externally electronegative to B; B is internally electronegative to A, externally electropositive to A; for "externally," "galvanometrically" may be used.

Personally I think the use of the term "negativity of action" is, especially if used in teaching, objectionable, because misleading and mysterious; "internal positivity of action" certainly seems to describe a real state; as terms, the one is but the converse of the other. I have, however, no more sympathy with those people who persist in finding "negativity of action" entirely meaningless than I have with those who will not understand "negative pressure" or negative quantities of any kind.

DAVID FRASER HARRIS.

Physiological Department, University, St. Andrews, October 31.

The Engineer's Unit of Force.

IN a review of some recent works on mechanics in your issue of October 19, the reviewer calls to account two of the authors whose books are reviewed for "implying that the unit of force in the engineer's system is a variable quantity."

Perhaps there may be others than the authors referred to and myself who would welcome more explicit enlightenment on the subject of the constancy of the engineer's unit of force.

D. J. CARNEGIE.

October 23.

THE engineer's unit of force is equal to the earth's present attraction on the standard pound mass at a specified place, viz., for this country, *London*. Its magnitude is such that it produces unit acceleration when acting on a mass of 32·182 . . lb., the engineer's unit of mass, sometimes called a slugg (sluggish). The formula $M=W/g$, where M is the mass in sluggs, is true for any latitude, g being the acceleration of gravity there, and W the weight of the mass in pounds force, as would, for instance, be registered at the place by a massless spring balance which had been graduated in London. If the pound-poundal system of units is an absolute dynamical one, so also is the pound-slugg-or engineer's system.

THE REVIEWER.

PROF. LANKESTER'S "EXTINCT ANIMALS."[1]

THOSE who, like the writer, had the good fortune to be present at the Royal Institution last Christmas and listened to Prof. Lankester's course of holiday lectures to young people will recall the fact that, although a goodly space was occupied by boys and girls from school, the theatre was elsewhere crammed with "grown-ups," who were quite as much interested and amused as the juvenile audience for whom these discourses were really designed.

It is, in fact, an open secret that quite elderly young people, as much as schoolboys and girls, enjoy their "ologies" when given to them in a form easy of digestion and with as few hard words as possible.

Before the memory of those pleasant afternoon discourses has faded from our minds comes a reprint of them in book form, with reproductions of more than 200 of the illustrations given in the text as we saw them on the screen.

Every boy and girl who heard those lectures will wish for a copy of this charming book, and those who did not will now read with delight the pictured story of extinct animals for themselves; nor will the "old boys" fail to take it up also.

Prof. Lankester explains that extinct animals are those which no longer exist in a living state. Animals, of course, die daily, and men too, but the lecturer tells us of extinct *kinds* of animals which no longer exist on the surface of the globe in a living state, although once they flourished and held their own.

He then informs his young friends of his own early experiences as a boy in visiting the British Museum and being fascinated by the huge head of an Ichthyosaurus from Lyme Regis with its large and bony-plated eyes, and its jaws, more than 3 feet in length, armed with powerful teeth.

Then the huge ground-sloth from South America attracted his wonder and admiration by its vast bulk, and he learnt that living upon the leaves of trees, but being too heavy to climb, it stood on the ground and pulled the trees down to it in order to feed on the young branches.

Their remains, often with the bones of the same individual lying in one spot, occur in the vast "pampas formation" and in the alluvial mud of the great rivers such as the La Plata. Here, too, one meets with the giant armadillo, and another strange creature, called the Toxodon, like a huge guinea-pig, nearly as big as a rhinoceros, with tremendous chisel-like teeth in front.

Prof. Lankester shows the thigh-bone of a giant reptile from North America more than 6 feet long (known as Atlantosaurus). What the size of the entire animal must have been we can best judge by paying a visit to the Cromwell Road Museum to see the skeleton of the Diplodocus lately set up there, which is 80 feet long and fully 14 feet high!

Passing rapidly over such forms as the ancient rhinoceros, the northern hippopotamus, the beaver, and great auk—once common in Britain, but now extinct—the author tells how zebras, quaggas, antelopes, and giraffes are being fast killed off in Africa by our sportsmen, whilst the dodo and "Steller's sea-cow" were eaten up long ago, like the giant tortoises, by our early voyagers, who victualled their ships with these rare animals.

The author next explains the causes which have brought about the migration of some animals and the extinction of others, and how changes of climate and

[1] "Extinct Animals." By E. Ray Lankester, M.A., LL.D., F.R.S. Pp. xxiv+332; with 218 illustrations. (London: Archibald Constable and Co., Ltd., 1905) Price 7*s*. 6*d*. net.

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